MUSEUM STORIES

FOR CHILDREN

SERIES VI

NUMBER ONE

MARCH 5, 1927

FIELD MUSEUM OF NATURAL HISTORY

Field Museum welcomes you to the spring entertainments, which are now being given under the provisions of the Raymond Fund, and hopes that the programs will be both beneficial and pleasing to you.

D. C. DAVIES, Director

ANIMALS AND INDIANS OF THE NORTHWEST COAST

Today we are to visit some of the Indians who live on the Pacific coast; and we shall see some of their animal neighbors, too. These Indians can teach us a great deal about the ways of living creatures; for they are a hunting and fishing people. Long before the white men came, Indian villages were scattered all along the coast from the Columbia river in Washington, through British Columbia in Canada, to Alaska. Streams, rivers and ocean provided abundant supplies of food fish. The great cedar forests and the mountains sheltered numerous game animals. Now-a-days game is not so plentiful; and the Indians are learning the ways of the white man. There are some tribes, however, who still fish and hunt as in the days long ago.

Northwest coast Indians cut down great cedar logs and shape them into fishing canoes. Often they carve the ends in animal form. In these dug-out canoes they venture out to harpoon seals, whales and other creatures of the sea. They are careful not to let the animals know exactly what is happening. That is why they say, "We are gathering driftwood," when they intend to catch their prey. Halibut are caught on large wooden hooks, sometimes carved with animal figures. Olachen fish are taken for the oil which can be obtained from their bodies. The Indians carve immense wooden feast bowls as containers for fish oil and other foods. Often these bowls have the shape of seals, with flippers flat against the sides. Salmon is the most common food fish. These and other fish are hung on frames and dried in the sun, or smoked over a fire, providing food for periods when fish are

Although the northwest coast Indians like sea foods best, part of their time is spent in hunting animals of forest and mountain. They shoot deer, elk and moose with bow and arrow; they catch mountain goats and sheep in nooses; and they set dead-fall traps for bears. The Indians believe that the animals have power to take human shape and live in villages as people do. They call all animals and fish "the other people" and are very polite to them even when fishing or hunting. In one tribe the hunter who kills a bear brings it into the house, props it in sitting position, puts a hat on its head and politely offers it food.

Many tribes believe that they are related to animals because their ancestors are said to have married some of the "other people" or have had adventures with them. The Indians are divided into groups or clans called by names such as: Eagles, Wolves, Grizzly Bears, Ravens and other creatures. Each group has the right to tell certain stories, usually about their relations with the animals; and each has the right to carve or paint pictures of certain animals.

Carvings and paintings of animals are made on many objects, such as: the tall house posts or totem poles outside the houses; cedar plank house fronts; posts, beams, screens and walls inside the houses; wooden dishes, horn spoons, great wooden boxes, robes, hats and even queer wooden masks. The artists use an odd method of drawing animals. Some pictures look as if the animal had been split along the back-bone and spread out so that both sides face one another. Others are spread out so that half the nose points one way and the other half the opposite direction. Still other animal designs are cut up and scattered over the object.

You can see some of these animal pictures carved and painted on various objects in the east half of Mary D. Sturges Hall (Hall 3). Look especially for Chilcat Indian blankets

woven of mountain goat wool, with peculiar animal designs spread over the material.

The artists usually choose certain prominent parts of the animal as marks or signs of that particular creature. For example, you always know that a picture is meant to be a beaver if it has two large front teeth, a scaly tail, and paws holding a stick up to its mouth. The killer-whale should have a large fin on top of its back, a tail turned down, and a large mouth with many teeth. The mark of the raven is a long straight beak; that of the eagle, a beak curved downward; and that of the hawk, a beak curved inward so the tip touches the chin. The side view of the bear is often shown, with large fore-paws held up. Look again through Hall 3, and try to find the animals by their special marks. At the east end of the hall you can see the model of a cedar plank house with fish nets, dug-out canoe, carved posts and other common northwest Indian articles. At the east end of James Nelson and Anna Louise Raymond Hall (Hall 4) there is a life-size model of a northwest coast Indian home. The group shows Indians cooking, and making clothing, mats and baskets. Look for the Indian baby in its cradle and see how the mother puts it to sleep.

Many of the animals shown in the pictures today can be found in Halls 15 and 16. Hunt for moose, deer, bears and beavers. Other animals of the northwest to be found in these halls are the otter, wolverine, marten, porcupine, wolf, cougar, lynx, mountain goat and mountain sheep. In Hall 18 you can find the salmon and halibut; and in Halls 20 and 21 are eagles, hawks, a raven and a large group of sea birds from the northwest coast.

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CHILDREN

SERIES VI

NUMBER ONE

MARCH 5, 1927

FIELD MUSEUM OF NATURAL HISTORY

MUSEUM STORIES FOR CHILDREN

SERIES VI

NUMBER TWO

MARCH 12, 1927

FIELD MUSEUM OF NATURAL HISTORY

In the films today you will see plant and animal life in tropical America. The story will give you some information about the things you see.

D. C. DAVIES, Director.

CANE SUGAR

If you were to visit Cuba, you would probably see native boys chewing the ends of thick greenish sticks, which are pieces of sugar cane broken from jointed stalks. Sugar cane plantations resemble cornfields, with rows of pithy stalks, topped by long green leaves. The stalks contain quantities of sweet juice which is used to make sugar for the market. When the crop is full-grown, the harvesters strip the leaves and cut each stem near the ground, using a hooked knife. The cut cane is then carried in carloads to a sugar factory, or "central."

In the factory the cane stalks are pressed between heavy rollers until all the juice is squeezed out. The crushed stems, called "bagasse," make fuel. After the sugar cane juice is mixed with lime to remove impurities, the solid matter is pressed into hard cakes called "cachaza," and used for fertilizer. The juice is then boiled until it condenses to syrup; and after that the syrup is crystallized. Have you ever seen fudge "turn to sugar"? Raw sugar crystals are formed in a similar way. After the grains have formed, the left-over molasses is used for making liquors and other products. The raw sugar is poured into large bags and shipped to another factory called a "refinery."

In the refinery the dark raw sugar is changed into glistening white grains, ready for market. After the raw crystals are dissolved in water, the brown liquid is filtered through charcoal made from charred animal bones. The filtered liquid is as colorless as drinking water. When the syrup is crystallized again, the grains are pure white, or refined. Then they are put into bags or barrels and sent to market as ordinary table sugar. Some of the

sugar is pressed into cubes, rectangles and special shapes.

In Hall 25, on the south side near the center, are exhibits which show how sugar is made. Look for the green cane stalk and follow the number on the labels until you reach the raw crystals. Now you can imagine that you have been through a sugar "central" in Cuba.

LEAF CUTTING ANTS

Have you ever heard of a farmer less than an inch long? Thousands of large ants in tropical America cultivate crops for their food, as farmers do. If you were to watch some of them at their work you would see them run up tree trunks, bite pieces the size of a dime from the leaves and carry the fragments to their nests. Then they cut the pieces into bits and shape them into balls, which are tucked away in corners of the nest. The balls of leaf fragments form the ground for the growth of fungus plants which develop tiny threads called mycelia. The mycelia swell into soft white masses; and these are the chief food of the leaf cutting ants. The "Atta", as the ants are called, and their food crops are not shown in the galleries; but you can see several kinds of fungi at the northeast end of Hall 29.

THE GREAT ANT-EATER

Scientists have named certain animals "edentate", which means toothless. Most of these animals do have a few odd-shaped and rather useless teeth. The great ant-eater is one of the completely toothless edentates. It licks up insects and swallows all of them without chewing. The large curved claws tear open the nests of ant-like termites, its favorite food. When the termites swarm out to repair the break in their home, hundreds of them are caught on the sticky tongue and drawn beyond the slit-like lips into the long slender mouth cavity. You can see the giant ant-eater or ant-bear in Hall 15, at the southeast end.

THE THREE-TOED SLOTH

Someone has compared the sloth to a slowed-down motion picture because it is so slow in moving about. It spends most of its life in trees; using the branches for a bed and the leaves for food. It sleeps on the average of eighteen hours a day, often huddled in a crotch of the tree with head dropped on the chest. When searching for food it travels slowly from branch to branch with its body hanging like a swing. The three-toed sloth has twelve curved claws or hooks, three on each foot; and these are very convenient for hanging upside down from a branch. The baby sloth is carried thus in a swinging cradle, its small body pressed flat against its mother's stomach, its arms and legs spread apart and claws hooked firmly into her fur. If danger approaches, the mother sloth may roll up into a ball with her baby hidden safely in the center. The three-toed sloth is so particular about the kind of leaves it eats, that it seldom lives long in captivity. Some full-grown sloths from South America can be found in Hall 15. Two of them are the three-toed type, like the sloths shown in the picture.

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MUSEUM STORIES

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SERIES VI

NUMBER THREE

MARCH 19, 1927

FIELD MUSEUM OF NATURAL
HISTORY

Some of the most interesting exhibits in the Botany and Geology Department of Field Museum are those which deal with the uses to which man puts plants and minerals. These are called economic exhibits. Many of the motion pictures this Spring have been chosen to show you still more clearly how plants and minerals serve man. The economic film today is on "Paper."

D. C. DAVIES, Director.

Have you ever thought of the things you would lack if paper had never been invented? Your books, your magazines and newspapers, wall paper, writing and drawing paper, tissue paper, cardboard—hundreds of things which you use every day are made entirely or in part of paper; and for all these things, we must thank China; for paper was made in that ancient

land as early as the year 220 B. C.

That first Chinese paper was made from silk; but beginning with the year 105 A. D. paper like ours was made from raw vegetable fibres and cotton rags. For more than six hundred years, the use of paper was confined to China; but in 751, Arabs at Samarkand were attacked by the Chinese. The attack was repulsed and a number of Chinese were taken prisoner. Among them were a few paper makers. They taught their art to the Arabians; and from Samarkand, the knowledge of paper making spread to the whole Mohammedan world and thence to Christian Europe. The first European paper mills were founded in Italy and Spain about 1150; and in 1690, the first American paper was made in Roxborough, near Philadelphia.

Almost any kind of vegetable fibres can be used in the making of paper. The Chinese used cotton principally. Their neighbors in Japan made paper from the inner bark of the mulberry tree. The Arabs were probably the first to make paper from flax. Now, paper is made from all of these materials and, in addition, from wood, straw, corn stalks, sugar cane

and grass.

No matter which material is used, the first step in the making of paper is the separation of the cellulose fibres in it from impurities. Next, the fibres are bleached, beaten to a pulp and mixed with just the right amount of water. This mixture is spread on a cloth usually made of brass wire and is there partially dried. The drying is completed on rolls of felt and the resulting paper is ready to be treated according to the use for which it is intended. Sometimes it is left rough, sometimes it is smoothed by pressing it between hot metal rolls. If ink is to be used on it, the paper must have a coat of gelatine, starch or clay to keep the ink from spreading. Colored papers are made by mixing dye with the pulp or with the coating. Lustrous papers are polished with metal rollers. All of this work is, in our day, done by machinery. Our word paper comes from papyrus, the reed from which Egyptian writing material was

Our word paper comes from papyrus, the reed from which Egyptian writing material was made. It was not a true paper; for it was not made of fibres felted or matted together. If you examine the pieces of papyrus in the Egyptian collection. Hall J. Ground Floor, you will see

examine the pieces of papyrus in the Egyptian collection, Hall J, Ground Floor, you will see how strips cut from the papyrus reed were pressed together in its manufacture.

Chinese paper can be found in case 33, at the north end of Hall 32; and in case 26, the Blackstone Chinese Collection, Hall 24. In the Botany Section, Charles F. Millspaugh Hall, Hall 26, are the spruce, poplar, gum and pine trees from which paper is made; and in Hall 28 are exhibits which show paper made from cotton, corn stalks, mulberry bark, rice straw and grass.

STRANGE MOTHERS

Of all the animals which please young visitors to Field Museum, none delight them more than groups which show mothers with their babies; and perhaps the most popular of these mothers are the kangaroo, the koala and the opossum. All three of these animals are equipped with pouches, on the outside of their body, in which their young are carried. Some of the children call these pouches "baby-cabs." They might better be called "incubators"; for it is within them that the babies change from helpless, naked bits of life to furry little animals able to run about and seek their own living.

When a baby kangaroo is born, it is less than an inch in length. Its mother takes it carefully in her mouth and places it in her roomy fur-lined pouch. There it remains, nourished by milk, until it is about the size of a half-grown cat. At that time it begins to nibble at the grass and leaves which form its mother's diet; but at the first hint of danger it dives head first

into the pouch and is carried away by the mother as she leaps to safety.

The kangaroo's home is in Australia and the nearby islands; and there, too, lives the koala or native bear. It is a tree animal and it sleeps most of the day, seeking its food of tender leaf-sprouts only after nightfall. Its one baby is, therefore, not exposed to as much danger as that of the kangaroo; so, after it begins to grow up, it does not return to its mother's pouch; but rides on her back with its claws firmly hooked in her thick fur. Don't you think the koala looks like a Teddy bear?

An even more surprising mother is our own Virginia opossum. She often carries as many as thirteen babies in her pouch. At birth they are not much larger than peas; and they lie snug and warm in the folds of their mother's skin until they are as large as rats. After that they are often seen riding on her back, occasionally with their tails curled tightly around hers. The kangaroo, koala and opossum and their young can be found in Hall 15. Don't you think they are all extremely good mothers?

DOROTHY COCKRELL, Guide-lecturer.

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SERIES VI

NUMBER THREE

MARCH 19, 1927

FIELD MUSEUM OF NATURAL HISTORY

MUSEUM STORIES

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SERIES VI

NUMBER FOUR

MARCH 26, 1927

FIELD MUSEUM OF NATURAL HISTORY

On Saturday morning, April second, Captain Donald B. MacMillan will describe his experiences as leader of the Rawson-MacMillan Expedition of Field Museum in 1926. Captain MacMillan will speak first at ten a. m. and his talk will be repeated at eleven a. m. His lecture will be illustrated with motion pictures. The film previously announced for April second will be shown during the Autumn course.

D. C. DAVIES, Director.

Long before a spoonful of sugar becomes a mass of shining crystals, it is part of a plant. Some of our sugar is made from a large beet much like our common garden variety except that it has a great deal more sugar in it. Unlike the sugar cane, sugar beets grow best in temperate, moderately cool climates. Important beet growing states are Michigan, Colorado and Utah; and there are sugar beet farms and factories in Illinois also.

The plants grow in long rows; and each one has large reddish-green leaves spread out to get the sunshine, which is important in helping the sugar to develop. When the bulging fibrous roots have stored enough sugar, the plants are harvested and sent to a sugar factory. Now-a-days on many farms, special machines are run down the rows, loosening the earth, so the beet plants may be lifted easily and pulled out by the roots. The tops are cut off and the leaves fed to cattle. The roots are piled in wagons or railroad cars and shipped immediately to a sugar factory. Pitch-forks with metal knobs on the end of each tine are used, so the beets will not be injured and lose juice by "bleeding."

In the factory the beets are washed and sliced into thin ribbon-like pieces. After the juice is soaked out, the pulp is used for cattle feed. The juice is purified, filtered, condensed and crystallized; all processes are much the same as in cane sugar manufacture. Sometimes the beet sugar is sent to market without being "refined"—or filtered through charcoal made from animal bones. Much of the jam we buy in the stores is made with unrefined or raw beet sugar.

On the south side of Hall 25, near the center, there is a natural size model of a sugar beet, the original of which was grown on a farm in Illinois. All the important steps in beet sugar making are shown in the same case. Look for the map showing the beet

sugar countries; and compare it with the map showing cane sugar lands.

WOOL AND NATIVE WEAVERS

Wool is a special kind of hair which grows on the bodies of certain animals. The natives of America did not have domestic sheep until white men brought them from Europe. At that time the Navaho Indians of the southwest began to raise flocks of sheep; and soon became famous for weaving blankets. At the east end of Hall 6 you can see a small model in which one Navaho woman is shearing a sheep and another woman nearby is weaving a blanket.

Long before white men came, however, Indians north and south of the Navaho were using wool from native animals and weaving beautiful robes. The Chilcat Indians of the northwest coast used mountain goat wool for woven blankets. You can see some of these in Mary D. Sturges Hall (Hall 3). Mountain goats can be seen at the entrance to

Hall 16.

The Indians of Peru and Chile used the wool of llamas, alpacas and vicugnas. The coarse llama wool was woven into blankets for the common people; the finer alpaca wool was used for the blankets of nobles; and the soft wool of the wild vicugna was woven into robes for the Inca rulers alone. People today say that those ancient fabrics have never been excelled. You can see some of them at the east end of Hall 9. The wool bearing animals of Peru can be seen in Hall 15.

SNOW CRYSTALS

When large snowflakes fall on the sleeves of your coat, do you watch to see the many patterns—each one different from the others but just as beautiful? Every snowflake that you see has had several different shapes while it was forming in the clouds. A tiny particle of water in the air may get so cold that it will begin to turn into solid matter. If it falls to the ground like a small white grain or a miniature snowball, it is called granular snow. This kind often comes in very cold weather. Some water particles, however, stay in the clouds for a long time, even after they have become cold enough to be solid. These usually grow larger and change rapidly into forms known as crystals. Most snow crystals are flat and rounded at the edges like lace doilies. In their formation all of them follow a law of nature by which they crystallize with six sides or "facets." A snowflake may keep on growing a long time by adding to itself more snow; but it will always keep very close to the six-sided arrangement. Snow is always forming in the clouds all over the world; but it never falls to the ground unless the atmosphere is cold enough to preserve the solid form.

Crystallization also occurs in other substances. Many minerals have special crystalline forms. Some of them, such as quartz, are six-sided like snowflakes; others are formed with more or less facets. Hall 34 contains many beautiful crystals, especially in the William J. Chalmers Crystal Collection, at the center. Notice the variety of

shapes and see if you can find some which remind you of snowflakes.

MARGARET FISHER, Guide-lecturer.

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MUSEUM STORIES

FOR CHILDREN

SERIES VI

NUMBER FIVE

APRIL 2, 1927

FIELD MUSEUM OF NATURAL HISTORY

Kennett L. Rawson was just fourteen years old when, as cabin boy, he shipped with Captain MacMillan on his first trip to the Arctic. On his return, Kennett wrote a book about his adventures, "A Boy's Eye View of the Arctic"; and it is his first trip which he describes in the story he was written for you today. Last summer, Kennett was included, as boatswain, in the Rawson-MacMillan Expedition of Field Museum, 1926; and it is about this second trip that Captain MacMillan will talk to you.

D. C. DAVIES, Director

MY FIRST ARCTIC TRIP

When I received the news that Captain MacMillan had chosen me as a member of the crew of the arctic schooner *Bowdoin* for his forthcoming expedition, I was about the most surprised person this side of the equator. As soon as school was over, I repaired without delay to Wiscassett, Maine, where the vessel was outfitting. Upon my arrival Mr. Robinson, the mate, put me to work loading cargo. So for the next week I wrestled with what seemed like a never diminishing mound of provision cases, not to mention gasoline drums, aeroplane parts, Liberty motors, and other pleasant little back-breakers. Indeed, I could scarcely believe that so much could be crammed into so small a ship; and even less that I had carried some of the things I had.

At last arrived that long expected and keenly desired date, Saturday, June 20, 1925—sailing day. At two o'clock the skipper uttered the fateful words, "cast off"; eager hands freed the lines; and we were under way for the alluring lands beyond the Arctic Circle. From our starting point we sailed northward along the Nova Scotia coast, through the Gulf of St. Lawrence and the Straits of Belle Isle to Battle Harbor, Labrador. Three more days sail put us at Hopedale, the southernmost settlement of the Eskimos.

These denizens of the Northland are a most interesting people. They are not the fierce savages I had always believed them to be. On my first encounter with them, I was all prepared to perceive the vicious, glowering faces I had seen depicted in the Sunday supplements. But to my surprise, a bevy of smiling faces and snapping black eyes greeted me as I watched them row alongside. In a short time they were clambering aboard and hailing with animation those of the crew they knew from previous voyages. At this juncture the mate appeared on the scene with a supply of candy and chewing gum. In an instant he was the center of interest. From every side brown, unwashed hands strained for a sample of these strange delicacies of the Kablenaks. Soon the strong white teeth, alike of venerable patriarchs and callow youths, were munching spearmint gum and Our Charley bars.

From Hopedale we put out to sea for Greenland, that mysterious island-continent lying on the northeastern flank of our hemisphere. Three days of tranquil sailing put us on soundings off the Greenland shore. We sighted the high, ice-covered mountains around the middle of the night, but it was nearly as bright as noon, for now we were only a few miles from "The Land of the Midnight Sun."

We were now entering on the most dangerous phase of the trip, as we were rapidly approaching Melville Bay, where we might reasonably expect heavy ice. This prospect did not dismay us for we knew that, if human skill and experience could take us through, Captain MacMillan could do it. We were soon off the Devil's Thumb, the beginning of the bay. Soon afterwards we met the ice. As far as the eye could see, this treacherous arm of Baffin Bay was choked with ice. The same sight met our eyes continuously for the next five days during which the ships rammed and pried at the cakes with their steel-clad bows, squirmed in and out, trying to follow the leads and anchored to the floes when it was impossible to proceed. At the end of this period we reached the open water of Smith Sound and proceeded at full speed for Etah, our base.

No sooner had the roar of the anchor chain ceased reverberating from the beetling crags surrounding the fiord, than we saw kayaks coming toward us. These were manned by members of the northernmost people in the world, the Smith Sound Eskimos. These children of the north are content to dwell way up within eleven degrees of the Pole, with just the necessities of life. They are happy to have only a sufficiency of food and clothing, so hard is the struggle for existence. But you must not think they are stupid, for on the contrary they are very intelligent and in some cases can even improve on American efficiency.

After three weeks of pleasant adventure at Etah the near approach of winter forced us to withdraw lest the fast forming ice imprison us. On our way south we suffered the misfortune of striking an uncharted reef at nearly dead high water. When the tide ebbed the *Bowdoin* was high and dry. In twelve hours the sea had risen again to just about the height we had struck on, and we were striving mightily to kedge her off. Suddenly, a million ton ice-berg obligingly intervened by rolling over and setting up a swell which lifted us off!

After this episode we put on full speed for home. The old Atlantic came through with a couple of rip-snorters in the hurricane line, but the *Bowdoin* was built right and came through in great shape. At last the blue hills of our native land poked above the horizon and brought home the sad realization that all was over. Back to daily life after our all too short sojourn in wonderland. All praise to Captain MacMillan and also his officers. Under his leadership we had endured all the perils of sea and ice, storm and fog, and come home with both ships and every man in better condition that when he left, a record rare in the annals of Arctic Exploration. But remember it is museums and scientific societies like the Field Museum that make such trips possible.

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FIELD MUSEUM OF NATURAL HISTORY

MUSEUM STORIES

FOR CHILDREN

SERIES VI

NUMBER SIX

APRIL 9, 1927

FIELD MUSEUM OF NATURAL HISTORY

A group of American Elk or Wapiti has just been installed in the central part of Hall 16. This portion of the Hall has been opened temporarily today so that you may have the first view of the new group.

D. C. DAVIES, Director.

THE AMERICAN ELK OR WAPITI

The common names of some animals, like the nick-names of people, are not always the same as the real ones. This is true of the American elk, the real name of which is "wapiti." According to an old Indian language "wapiti" means a certain kind of deer. White settlers in America, mistaking the animals for European elk, gave them the wrong name; and they have been known as elk ever since.

A full-grown bull wapiti has slender rounded and branched antlers. The summer coat of all wapiti is reddish-brown, with a large light colored patch of hair around the short tail. The winter coat is grey, mixed with white hair. The reddish-brown coat of the baby wapiti or fawn is spotted with patches of white hair. The wapiti is closely related to the European red deer but is much larger and stronger.

Many dangers are in store for every young wapiti and few of them live to develop great seven-branched antlers and become leaders of the herds. Usually the fawn is born in May or June; and is hidden by its mother among the bushes or fallen logs until its slender legs are strong enough to hold it steadily. When the baby lies very still it can seldom be seen even by a hungry wolf, for its spotted coat seems to be only patches of sunlight on the ground. Very young wapiti do not have the odor peculiar to older ones; and this is an additional protection.

When the fawn is able to run, its mother returns with it to the herd; and cows and calves seek grass, herbs and leaves high up on the mountain sides. An antlered bull wapiti joins the herd late in the summer; and in the early autumn there is often a fight between rival bulls for the possession of the herd. With the approach of winter the wapiti sheds its reddish-brown hair and grows a heavy coat of whitish-grey. At this time the baby loses its spots and begins to resemble its mother. Heavy snows and cold weather finally drive the herds down into the valleys. An old cow wapiti often leads the way; and the herds join in a great crowd, all migrating toward lower land. Antlers clash in many a fight until the masses again break up into smaller groups to search for food.

In the spring the wapiti sheds its winter coat for the reddish-brown one of summer. At this time, if the fawn is a bull, rounded knobs appear on its head, one above each eye; and these soon develop into curved spikes, the beginnings of antlers. The year-old bull fawn also has two well-developed tusks or canine teeth in its upper jaw. It no longer stays with its mother; for she usually is busy caring for another baby.

In the spring of its second year the young wapiti sheds the small curved spikes and develops antlers with four points. All summer, while the antlers are growing, they are protected by a soft hairy covering called "the velvet." In the autumn the wapiti rubs its head against bushes to scrape off the old velvet and to polish the sharp bone antlers. The two-year-old bull is not permitted to join the herd but is forced to wander with other young bulls until it is old enough to claim leadership.

The three-year-old wapiti bull sheds the four-pointed antlers and grows heavier five-pointed ones; and the next year there are six points on the new antlers. In the fall of its fourth year the wapiti is full-grown. There are often several battles between the great antlered animals before one of them gains complete control of the cows and calves in the herd. Some of the largest and strongest wapiti carry heavy seven-pointed antlers. With such weapons, these animals have nothing to fear from any other wapiti.

All of these wild creatures fear the sound of a gun; for they have learned by experience the dangers of the hunting season. Before white men came, there were numerous herds of wapiti in America, from New England to California and from Canada to the Carolinas. The Indians hunted them and used the skins for clothing and the meat for food. They used the teeth in place of beads or shells to decorate garments. You can see an Indian garment decorated with elk teeth, if you look in Stanley Field Hall, near the south end.

Although the Indians killed many wapiti every year, there were still plenty of these game animals in the country until the white men began to hunt them also. Then the wapiti were forced to seek new homes or die. To the danger of being killed was soon added the danger of starvation, as town and farm took away old feeding grounds. Today no wild herds of wapiti are to be found in the United States east of the Mississippi River; and there are only a few herds remaining in the west. These are protected by game laws and allowed to forage for food in the national parks, such as the Yellowstone.

Field Museum has recently installed a group of wapiti in Hall 16. They are all in the summer coat of reddish-brown. The fawn is old enough to have lost its spots. Look at the old bull wapiti and count the points on its antlers. Although all of the animals in this case are wapiti, they are known today as elk.

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D. C. DAVIES, Director.

in the central part of Hall 16. This portion of the Hall has

FIELD MUSEUM OF NATURAL HISTORY

A group of American Elk or Wapiti has just been installed

MUSEUM STORIES

view of the new group.

FOR

CHILDREN

SERIES VI

NUMBER SIX

APRIL 9, 1927

FIELD MUSEUM OF NATURAL HISTORY

ROOSEVELT ROAD AND LAKE MICHIGAN CHICAGO

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MUSEUM STORIES

FOR CHILDREN

SERIES VI

NUMBER SEVEN

APRIL 16, 1927

FIELD MUSEUM OF NATURAL HISTORY

The films today will show you migratory birds of Europe; and the story will tell you about some of the common migrants of the Chicago area.

D. C. DAVIES, Director.

BIRD VISITORS IN CHICAGO

How many different kinds of birds do you know by sight? If you have kept a record of the birds you have seen this spring, your list should be a long one by this time. Most of our bird visitors pass through Chicago during March, April and May. Some of them stay only a day or two, on their way further north; and others may build nests here and remain with us all summer.

Every spring many birds travel long distances in order to reach their favorite nesting places; and every autumn they make a return journey to their comfortable winter homes. Such regular change between summer and winter homes is called migration. For years people have been trying to find out why birds migrate, where they go, and when each group leaves and returns. They have discovered that birds choose their homes in places where they can find plenty of food for themselves and their families. They usually travel in groups, following rather definite routes; and at regular intervals according to the kind of bird.

As soon as the winter snows begin to melt and the ice breaks up in rivers and lakes, the wild geese start toward their breeding grounds in the north. Canada geese may be called the "harbingers" or messengers of spring; for they appear every year soon after the thermometer rises above freezing. Perhaps you have heard their strange "honk-honk" and looked up in the sky to see the V-shaped lines of wild geese following their leader northward. The Canada geese arrive in Chicago from the southern states early in March. They seldom stop in this region but proceed northward until they reach their favorite nesting places in Canada. Most of them prefer to fly at night and feed on water plants during the day. They keep pace with springtime throughout the trip, arriving in the Hudson Bay area about the last of April, when the thermometer registers 35 degrees Fahrenheit there.

Robins come very early every year, some of them reaching Chicago in February and The routes used by robins are so short that some people do not consider the birds The same individuals, however, seldom stay in one region all year. The robins which nest in our trees probably have spent the winter in the southern states; and the few which you have seen here during the winter have gone to build their nests in Canada. Like most migratory birds, groups of robins always seem to be playing a game of leapfrog as they travel to and from their winter and summer homes. The first robins to arrive in any region are the old ones which have nested there the year before; and they usually stay to raise families near the former home. The next group overtakes the early birds and journeys on further north. The last comers hurry north, often passing directly over the earlier migrants, which are already busy with their domestic duties.

According to one scientist, there are seven important routes used by birds which leave the United States during migration. The most popular route in the western hemisphere is the direct Gulf "flyway." Every spring birds from all over South America journey northward into Central America and then make a five to seven hundred mile flight across the Gulf of Mexico to the United States. Scarlet tanagers take this route, some of them travelling all the way from Peru to Canada. They fly by night and rest and eat during the day. Many tanagers spend the summer nesting in Illinois. In the fall they lose their brilliant black and scarlet feathers and go south disguised in plain greenish-yellow. Their southbound route gradually narrows so that in Central America all the tanagers fly within a hundred miles of each other. Later they spread all over the northwest part of South America.

Another favorite route of bird migration is that between Florida and South America, with a stop-over at Cuba. Sometimes this is called the "bobolink route" because thousands of these birds use it on their way between their winter homes in central Brazil and their nesting places in the northern half of the United States. They reach the Chicago region early in May; and you can soon find their nests hidden in the grass in fields or empty lots at the edges of the city. On the return journey southward they stop along the way to feed on seeds. The planters in the south do not welcome the "rice-birds," as they call the bobolinks, for these migrants often damage the crops. Like the tanagers, the bobolinks go south in a plain coat of dull feathers instead of the striking white, yellow and black of spring.

This month and next you can add many names to your list, especially if you look for warblers. Some children have seen more than a dozen different kinds of warblers in one day. The black-and-white warbler, also called creeper, lives in the Chicago area all summer. It leaves its winter home in the West Indies or Central America about March first and travels slowly northward, reaching Chicago by May first. This is practically the slowest migration rate of all North American birds, averaging only twenty miles a day.

You can see a number of different kinds of migrants in Hall 21. Look for birds which

resemble those you have seen out-of-doors this spring.

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D. C. DAVIES, Director.

of the Chicago area.

The films today will show you migratory birds of Europe; and the story will tell you about some of the common migrants

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MUSEUM STORIES

FOR

CHILDREN

SERIES VI

NUMBER SEVEN

APRIL 16, 1927

FIELD MUSEUM OF NATURAL HISTORY

MUSEUM STORIES

FOR

SERIES VI

NUMBER EIGHT

APRIL 23, 1927

FIELD MUSEUM OF NATURAL HISTORY

One of the films and the story for today tell you about the cotton industry. The other films show animals and birds; and you can see many of them in the Museum Halls.

D. C. DAVIES, Director.

THE STORY OF COTTON.

Nowadays we cannot get along without cotton. We use it for dresses and shirts, for pillows and comforters; and for so many things that it would take nearly a page to write them all down. Only a few centuries ago, however, some of our ancestors did not know that the cotton plant existed. When Greek merchants bargained with the weavers of India for cotton fabrics, they thought that cotton was a kind of wool which grew on trees instead of on the bodies of sheep.

Today we know that cotton is quite different from wool. If you examine a bit of cotton fibre under a magnifying glass, you will see a flattened, twisted tube, resembling a piece of fire hose partly unreeled. It is the twist in cotton fibre that makes spinning easy. Many such fibres form a compact mass called a cotton "boll". The fibres serve as a protective covering for the seeds; and the cotton boll looks more like a powder puff than the fruit of a plant. The plants are small bushy trees with heart-shaped leaves and flowers resembling hollyhocks.

Two important kinds of cotton are grown in the United States, Sea Island and Upland cotton. The crops raised on the Sea Islands of South Carolina are said to be the finest in the world. Unfortunately this kind of cotton grows well only in a few of the southeastern states. Upland cotton is raised all over the great "cotton belt", which includes the entire south. The Mississippi "delta", especially the bottom land of Alabama, is a wonderful cotton country.

Every spring, after the fields are plowed, cotton seeds are planted in long, narrow rows or "beds". When the young plants are a foot or two high, some of them are "chopped out", so that the others will have plenty of room. If planting is done in April, the early blossoms appear in June and the first ripe fruit is ready for picking in August. Autumn is a very busy season for the cotton pickers. Men, women and children go into the fields every morning as soon as the dew is off the plants. Each takes a row and picks the soft white cotton, throwing it into a bag strapped across the shoulder. Each bagful of cotton is emptied into a large basket which, in turn, is emptied into a wagon.

Before the cotton is hauled to the gin it is usually weighed twice, once in order to give proper credit to each worker for his day's picking; and again, in the wagon, in order to give the plantation owner credit for the amount sent to the gin. The ginning machines separate seeds and fibre; and the cotton is then pressed into large bundles, covered with bagging and strapped with iron bands. These bundles or "bales" are loaded on flat cars or river boats and sent to shipping centers and markets. Thousands of bales go down the Mississippi river to New Orleans every year; and are piled on the docks ready to be exported to foreign countries. Many more bales go to the large cities in our own country, where cotton is spun into thread

and woven into cloth.

For a long time people thought that the only part of the cotton plant which could be used was the boll. Recently they have discovered that every part of the plant can be used for some product, even to the roots and the hulls of the seeds. After the last cotton picking of the season, usually late in December, some of the old stalks and leaves are turned under the soil as fertilizer. If the plants are removed, however, the roots will yield a kind of a dye; and the woody fibres of the stalk can be made into paper or into coarse cloth for heavy bagging. After the longer fibres of the cotton bolls are separated in the gin, the shorter fibres which still cling to the seeds as "fuzz" are removed by special "delinting" machines. This fine lint is used in making celluloid and other common products. Motion picture films are made of celluloid and thus depend on the cotton industry.

Next to the cotton fibres used in cloth making, cotton seeds are the most valuable part of the plant today. The seeds yield oil, cattle feed, and many other by-products. Even the

ashes of the seed hulls give fertilizer for the fields.

A portion of the story of cotton is told by means of the exhibits in the Museum. In Hall 28, near a natural size model of the Sea Island cotton plant, there are cases showing products made from the stalk, cotton fibre and seed. See how many different ones you can find. Towards the center of Hall 25, you will see a new exhibit in which cotton seed oil

appears as one of the important vegetable oils of the world.

Cotton was grown in the western hemisphere before Columbus discovered America. The Spanish conquerors found the Aztecs and the Incas weaving beautiful cotton and woolen fabrics. The fibres were spun into thread with aid of long wooden spindles which had a carved or painted knob at the center. The thread was then woven into cloth on small hand looms. The Indian women kept their materials in a rectangular, covered work-basket or sewing box. Some of these boxes have been found in graves with Peruvian mummies; and they contain an interesting collection of cotton, wool, spindles, colored thread and bits of unfinished weaving. Look in Hall 9 for the Peruvian mummies and their work-baskets.

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D. C. DAVIES, Director.

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MUSEUM STORIES

FOR

CHILDREN

SERIES VI

NUMBER EIGHT

APRIL 23, 1927

FIELD MUSEUM OF NATURAL HISTORY

MUSEUM STORIES

FOR CHILDREN

SERIES VI

NUMBER NINE

APRIL 30, 1927

FIELD MUSEUM OF NATURAL HISTORY

This morning, we have the last of the regular Entertainments for Children; but two special programs have been arranged for the next two Saturdays. On May seventh, a film called "The Dragon Lizards of Komodo" will be shown; and on May fourteenth, the film will be "Racing with Death in Antarctic Blizzards".

D. C. DAVIES, Director.

Iron is one of the most important things in the world. Without it, life would not be possible. It gives the blood in your body its color and enables it to carry oxygen to the tissues. It must be present if leaves are to be green and if fruit is to ripen. Our clays and rocks receive most of their color from iron; and it gives color, too, to bricks, glass and certain kinds of paint. And when we come to the use of iron in the form of cast-iron or of steel, our list is endless. Transportation, artificial light and heat, water supply and building, all depend on iron; and iron machinery is used in the making of our clothing, our furniture and much of our food.

Iron is present in all of the rocks of the earth's surface; but in most of them, the amount of iron is too small to be mined. In some cases, water, seeping through these iron-bearing rocks, gradually dissolved some of the iron. This iron was deposited in the form of iron ore. In other cases, the internal heat of the earth caused the iron-bearing rocks to melt and the iron to collect as rich ore.

When the iron ore is on the surface or when it lies only a little way beneath the ground and the soil above can be stripped off, the ore is mined with steam shovels. When the ore lies far below the surface, it is reached by means of a deep shaft with galleries reaching out into the ore at various levels. The mining is done by men working with drills, shovels and other tools; and the ore is carried to the surface in cars. Both of these methods of mining will be seen in the films; and a model of a deep mine can be found in Hall 36.

Most of our iron ore is a kind of iron rust. It is never a bright gray like iron itself, but is a dull yellow or red or brown, like the rust which forms on your knife when you leave it out of doors. Rust is a compound of iron and oxygen. Before the iron can be used, the oxygen must be separated from it; and men have found that the best way to do that is to smelt the iron ore in a blast furnace.

A blast furnace is a tower about ninety feet high, built of steel plates lined with fire brick. If the ore is to be heated, fuel must be present; so about one-half ton of coke is added to every ton of ore put into the furnace. There are certain impurities in the ore which must not be present in the iron; and to remove these, an average of a quarter of a ton of limestone is mixed with each ton of ore. The mass of iron ore, coke and limestone, called the charge, moves slowly down through the furnace. As it goes, blasts of heated air are blown up through it to keep the mixture hot. Five tons of air are required to produce one ton of iron.

On its downward journey, the charge grows hotter and hotter. Near the base of the furnace, the iron melts out from the ore and drops to the bottom. The limestone and the impurities from the ore melt together and float on top of the iron as slag. The slag is allowed to run out of the furnace frequently; but the molten iron gathers more slowly and is removed at intervals of from four to six hours. The slag is used for road building or in the manufacture of Portland Cement or is discarded. The molten iron is cooled in the form of short bars called pigs or is taken directly to other furnaces to be made into steel.

While the process of reducing iron ore to iron is going on, many valuable gases, much like those which burn in your kitchen stove, are formed. They are collected at the top of the furnace and are led by pipes to the stoves which heat the hot blast and to other parts of the plant to serve as fuel.

The average blast furnace produces four or five hundred tons of raw iron every twenty-four hours; and the furnace is kept burning continuously until the lining of fire brick is worn out—often for more than a year. Some of this raw iron is used in our industries as cast-iron; but most of it is changed into steel. This is done by burning out the carbon which the iron has absorbed from the coke in the blast furnace; and by adding various substances, according to the use to which the steel is to be put. This part of the work is done in an open hearth furnace or in a Bessemer converter. The resulting steel is poured into molds in which it hardens, on cooling, in the form of ingots; and it is from these ingots that our steel rails, wheels, wires, rods, plates, machines and implements are made.

The motion picture this morning will show you the whole steel industry, from the digging of the ore to the finished products. After you have seen it, go to Frederick J. V. Skiff Hall, (Hall 37) on the second floor, and there you will find iron ore and a model which illustrates the work of a blast furnace.

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MUSEUM STORIES

FOR

CHILDREN

SERIES VI

NUMBER NINE

APRIL 30, 1927

FIELD MUSEUM OF NATURAL HISTORY